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IMPLEMENTATION OF RECYCLED PRODUCTS AT PUBLIC UNIVERSITIES IN MALAYSIA

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Abstract:
Raw materials are an important aspect of any business, particularly those that carry out manufacturing and construction activities. There are now recycled alternatives to many products and resources. These could help to cut costs and reduce your impact on the environment. Creating goods and services from recycled materials could also enable to market of the products as having less impact on the environment. Waste management has to be a crucial aspect related to the economic status of a country and the lifestyle of its population. Others, Malaysia having problems with less utilization of recycled products and this issue must be highlighted this time. Recycling in Malaysia involves the purposes of energy saving. With the growing energy demand and to conserve energy in an era of unpredictable energy markets, recycling is an indispensable option. The objectives were (1) to determine the current utilization practice of recycled products in the public university, (2) to identify the weakness of utilizing recycled products in a public university in Malaysia, and (3) to improve the utilization of the recycled products towards the public university building. The main purpose of this research is to improve the utilization of recycling materials in the construction industry in Malaysia. To achieve the best finding, the questionnaire was distributed to students of public higher institutions in peninsular Malaysia. A total of 145 respondents were involved in the questionnaire survey and analysed using descriptive analysis. The results presented show that the current practice utilization in this country still at a low level and besides that result, it shows there are also weaknesses in utilizing the recycled product. However, it is found that the solution in improving the utilization of recycled product gives the most effective strategy to minimize waste. By doing this research, it can be concluded that recycling plays an important role to practice every single person in enhancing their interest to keep the environment safe and sustainable.

Keywords: *Green Materials, Public University, Recycle Products*

1.0 INTRODUCTION

The waste and recycling materials should be evaluated for each of the proposed use. More specifically speaking, some significant deficiencies in properties must be identified and treated, based on specific performance requirements (Wang and Lee, 2013). The use of waste and recycled materials is becoming increasingly important in construction practices for energy, natural resources, and environment conservation consideration. Any type of solid waste and recycled material are generated from industrial production or human consumption activities. It is essential to thoroughly understand the generation, processing, clarification, and properties of subject waste and recycled materials under study. Construction waste must be recognized as a valuable resource because most types of construction waste can be reused or recycled (Wee *et al.*, 2015).

1.1 Problem Statement

Environmental protection is becoming a major concern as construction waste is now considered one of the main contributors to environmental degradation in the country. Despite the tangible benefits of recycling solid wastes, the practices, and hence to achieve is far less than expected. The amount of waste being diverted for recycling is less than 5%. This process had been carried out informally due to economic reasons. Lack of regulations and guidelines is one of the most serious problems that hinder the success of the recycling program in Malaysia (Hassan et al., 2000).

Cost and energy consumption are two of the key issues in recycling construction and demolition waste.(Jin and Chen, 2015) Most of the manufacturers have shown less interest in reusing recycle products as they alternative raw materials, and disregard the possibilities and the applications of this material at the end of the useful life (Del Río Merino, Gracia and Azevedo, 2010). Another contribution toward the problem in reusing the recycled product, they had to face lack of waste-processing facilities or companies to create the product and also lack of economic feasibility and viability in recycling the reusing the construction and demolition wastes, for example, when the cost for recycling and reuse exceed the recycled waste value, or when the landfilling tipping charge is lower for direct disposal (Jin *et al.*, 2017).

2.1 Aim

This study aim is to improve the utilization of recycling materials in the public universities building in Malaysia.

2.2 Research Objectives

i. To determine the current utilization practice of recycled products in the public university.
ii. To identify the weakness of utilizing recycled products in a public university in Malaysia.
iii. To improve the utilization of the recycled product towards the public university building in Malaysia.

2.3 Research Questions

i. What is the current utilization practice of recycled products in public universities?
ii. What is the weakness of using recycled materials in public university buildings?
iii. How to increase the utilization of recycling products towards the government building in Malaysia?

2.4 Scope of Research

The scope of research will be a focus on the trades on the questionnaire that will be distributed to the public of higher institutions. This is because the research is focus solely on student residents who stay in the university building. This research is to determine the current utilization of recycling products and identify their weakness to improve the usage of recycled products, especially in a public university building. Simple random sampling will be used for this research. The questionnaire survey is used as an instrument and will be distributed among the student in public higher institutions in peninsular Malaysia.

2.0 LITERATURE REVIEW

2.1 Waste recycling in Malaysia

According to the National Recycling Target, 22% of solid waste can be recycled in the year 2020. The recycling stage in Malaysia is the infant stage. So, the current recycling rate is only at 5% and about 95% of waste is disposed of directly in the landfills and this will lead to unstable management. The construction and demolition wastes are predicting to be 10% to 30% of waste to be delivered to the landfills. Most of the landfills will receive the brunt of un-recycled construction and demolition wastes. (Wee et al., 2015).

2.2 Weakness in utilisation of recycled product

By recycling products, there will be many hidden costs and processes that need to be associated hence it will take more time to handle the recycled product. The rate of waste generation to keep arising and this will cause insufficient facilities and technology used and some of the practitioners dodge using a reliable waste management technique due to the higher cost needed by them (Sin et al., 2013). Besides that, for the recycling product, there are recycled products are normally come out with low quality (Ulubeyli, Kazaz, and Arslan, 2017).

2.3 Solution to improve the utilisation of recycle products

Strategic planning is important to face incorporate recycling in solid waste management. Short term and long term are needed to develop the process of enhancing the recycling materials (Hassan et al., 2000). It is an important thing to select the proper materials and resources for sustainable building. The territory destruction will become lower and can control the depletion of natural resources. (Nezakati and Hosseinpour, 2015). Next, by understanding the recycling practice standard and recommend the materials accordingly and also avoiding hazardous materials because of the difficulty in treatment and recycling (Brewer and Mooney, 2008).

3.0 METHODOLOGY

This study was adopted by using the quantitative method and the questionnaire have been distributed to 145 respondents and the result obtained will be analysed by using descriptive statistics to find the output. The questionnaire in this research was distributed based on simple random sampling to the university students who use the government building for a certain period through google form.

Likert scale is commonly used in questionnaires in the research. It is the most widely used to scaling the responses by the respondent in the survey research and contributes to the accuracy of the decision by the respondent. Respondents are required to answer the survey by using the scale provided. Each statement will produce the result of the frequency and percentage of the respondent. The data were analysed by using the

Statistical Package for Social Science (SPSS) software and complete all the evaluations enclosed with the text and table for ease of understanding.

4.0 ANALYSIS AND FINDINGS

A total of 145 sets of questionnaires were successfully returned. After the data have been successfully collected, the analysis of the data is conducted to establish the result and findings. The study found that more than half (70.3%) completed the survey aged between 22 until 23 years old students and most of the respondents who accomplished the survey have a bachelor's degree (73.1%) as their current status of education. The majority of the respondents are female which brings to 66.2% of respondents. This majority respondents were contributed and willingly to provide their valid opinion regarding the current utilization practice in public university and also their understanding about weakness and how to overcome it.

4.1 To Determine the Current Utilisation Practice of Recycled Products in Public University

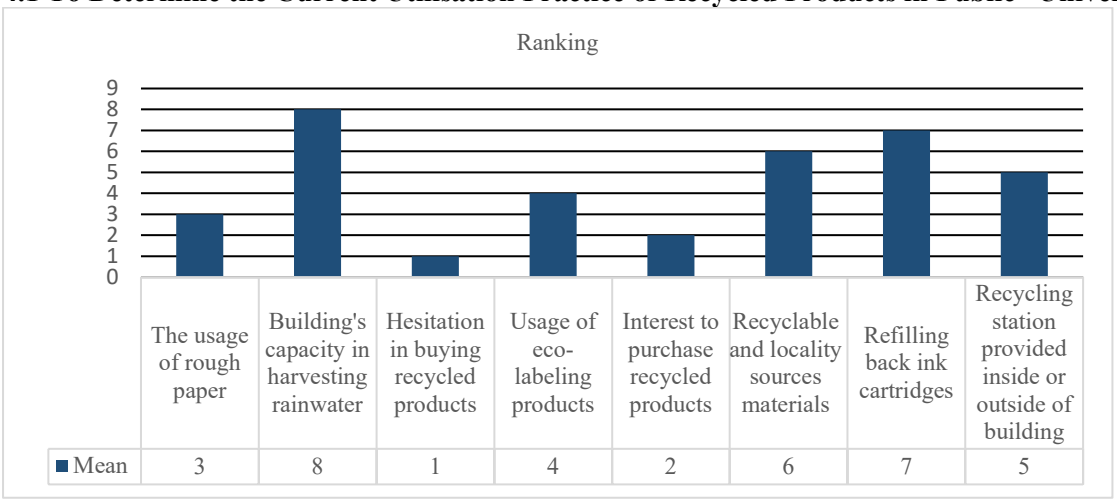

Figure 1.0: Descriptive statistics for current practice utilisation of recycled products

Figure 1.0 shows the list of the current practice utilization of recycled products in perspective rank and the mean index for each practice to the survey before this. According to the graph above, it shows that hesitation in buying recycled products scored the highest mean index which is 3.84. The cost of recycling products normally pricey due to the processing cost, transporting cost and also managing cost and this contributes to people's hesitation to purchase them. (Biddle, 1993). The second mean index score is the interest to purchase recycled products. The consumer's intention in purchasing the recycled products or purchased remanufactured is important in determining the creation value of the system to maintain the development of the recycling market and also value propositions (Bigliardi et al., 2020). The third score was the usage back of the rough paper with the score mean is 3.73. In this way, most students prefer to use back their rough paper to avoid the difficulty to achieve the recycled paper and at the same time reduce the energy needed to produce paper from fresh pulp from thousands of trees in the process.

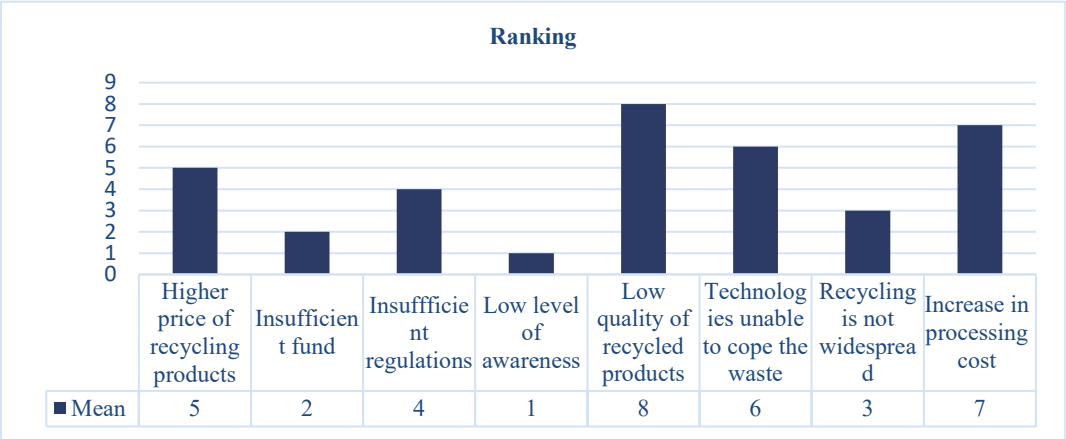

Figure 4.2: Descriptive statistics for weakness of utilizing recycled products in a public university in Malaysia

4.2 To Show the Weakness of Utilizing Recycled Products in a Public University in Malaysia

Figure 4.2 shows the list of the weakness of utilizing recycled products in a public university in Malaysia in perspective rank and the mean index for each weakness according to the survey held before this. The highest mean score is the low level of awareness. Recycling awareness is very important to overcome environmental problems that occur and it can contribute to a sustainable environment. The second highest in the table above is the insufficient fund that occurs due to the higher price needed to minimize the waste with a mean score is 3.81. Insufficient funds will give an impact on the current recycling market and economics in this country (Sin et al., 2013). The third highest weakness based on the table above is recycling is not widespread on large scale. Based on the article stated by (Sin et al., 2013) they say that recycling needs aggressive marketing and such an effort to locate the market and sells them at a higher price. This can prevent the ineffectiveness of waste implementation of waste recycling in this country.

5.0 CONCLUSION

The analysis shows that majority of the respondent still not common with recycled product utilization in their daily life. Although the recycling product had been introduced for the past few years, most of the buildings that respondents stay minority have less utilization of recycling products. Mostly of respondents understand that sometimes, some of the recycled product can bring disadvantages when using them. Other than that, many improvements can be made to utilize the recycled products, and the improvement statement given the majority agreed by the respondents.

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